

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/050744 A1

(51) International Patent Classification⁷: C08G 77/08

MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:
PCT/AU2003/001600

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(22) International Filing Date: 1 December 2003 (01.12.2003)

Declarations under Rule 4.17:

(25) Filing Language: English

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

(26) Publication Language: English

— *of inventorship (Rule 4.17(iv)) for US only*

(30) Priority Data:
10/308,562 2 December 2002 (02.12.2002) US

Published:

(71) Applicant (for all designated States except US): RPO PTY LIMITED [AU/AU]; Suite 201, National Innovation Centre, Australian Technology Park, Eveleigh, New South Wales 1430 (AU).

— *with international search report*

(72) Inventors; and
(75) Inventors/Applicants (for US only): ZHA, Congji [CN/AU]; C/-RPO Pty Ltd, Suite 212, National Innovation Centre, Australian Technology Park, Eveleigh, New South Wales 1430 (AU). KUKULJ, Dax [AU/AU]; C/-RPO Pty Ltd, Suite 212, National Innovation Centre, Australian Technology Park, Eveleigh, New South Wales 1430 (AU).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(74) Agent: BALDWIN SHELSTON WATERS; 60 Margaret Street, Sydney, New South Wales 2000 (AU).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

WO 2004/050744 A1

(54) Title: PROCESS FOR PRODUCING POLYSILOXANES AND USE OF THE SAME

(57) Abstract: A process for the preparation of an organosilicon condensate which comprises reacting together (A) at least one silicon containing compound having at least one silanol group; and (B) at least one silicon containing compound having at least one -OR group in the presence of (C) a calcium or magnesium catalyst selected to allow the reaction to proceed and (D) at least one solvent. Advantageous catalysts include calcium hydroxide, calcium oxide, magnesium hydroxide or magnesium oxide. Advantageously the solvent may be a protic solvent such as water, methanol, ethanol, 1-propanol, 2-propanol, 1-butanol and 2-butanol. The invention also relates to condensates, such as siloxanes, prepared by the process.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU03/01600

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl. ⁷ : C08G 77/08		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI & Keywords: siloxane, silanol, alkoxy, calcium, magnesium, catalyst, and similar terms.		
JAPIO & Keywords as above.		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 03197486 A (SHIN ETSU CHEM CO LTD) 28 August 1991 Abstract	1-10, 18-24, 32-37
A	EP 382366 A (DOW CORNING LTD) 16 August 1990 Pages 2-3, Examples 1&3	1-56
A	EP 503825 A (DOW CORNING S.A.) 16 September 1992 Entire document	1-56
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C		<input checked="" type="checkbox"/> See patent family annex
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>		
Date of the actual completion of the international search 24 December 2003	Date of mailing of the international search report 7 JAN 2004	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer N.L. KING Telephone No : (02) 6283 2150	

INTERNATIONAL SEARCH REPORTInternational application No.
PCT/AU03/01600

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2309460 A (GENERAL ELECTRIC COMPANY) 30 July 1997 Entire document	1-56
A	WO 0104186 A (FRAUNHOFER-GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG E.V.) 18 January 2001 Entire document	1-56
A	GB 918823 A (DOW CORNING CORPORATION) 20 February 1963 Entire document	1-56
A	US 5109093 A (Rees et al.) 28 April 1992 Entire document	1-56
A	US 3668228 A (Zbinden et al.) 6 June 1972 Entire document	1-56
A	JP 03-017158 A (TOSHIBA SILICONE CO LTD) 25 January 1991 Abstract	1-56

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU03/01600

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member			
JP	03197486					
EP	0382366	AU	49168/90	CA	2009278	JP
		US	5109094			2235931
EP	0503825	CA	2062333	JP	5178996	US
GB	2309460	DE	19701266	FR	2744128	JP
		US	5948853			9310022
WO	0104186	CA	2378756	DE	19932629	EP
GB	918823	US	3094497			1196478
US	5109093	AU	49169/90	CA	2009276	EP
		JP	2235933			0382365
US	3668228	BE	734472	CH	492071	CH
		DE	1928610	ES	368275	FR
		GB	1241893	NL	6908983	SU
JP	03017158					
END OF ANNEX						